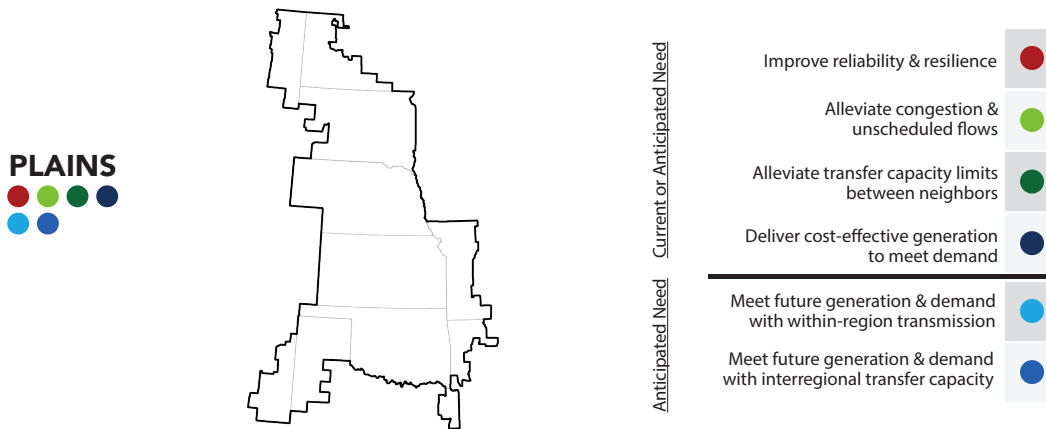


## FACT SHEET

# 2023 NATIONAL TRANSMISSION NEEDS STUDY PLAINS REGION

The U.S. Department of Energy's Grid Deployment Office (GDO) released the National Transmission Needs Study ("Needs Study") in October 2023. The Needs Study is the Department's **triennial state of the grid** report. It identifies transmission needs and provides information about current and anticipated future capacity constraints and congestion on the Nation's electric transmission grid. In this fact sheet, we highlight the transmission needs of the Plains region. The Needs Study provides further detail on the benefits of transmission that could be realized throughout the country.



## FINDINGS OF TRANSMISSION NEED IN THE PLAINS REGION

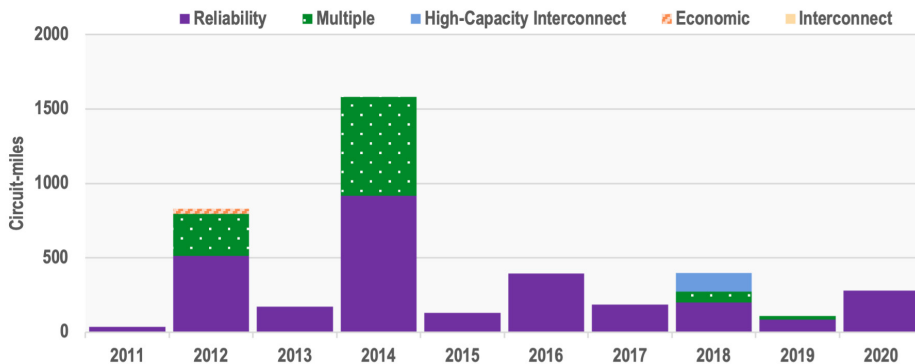
- › **Improve reliability and resilience.** The Plains region was unable to import additional generation capacity during the February 2021 cold weather event, negatively impacting resource adequacy. Increased bi-directional transfer capacities with neighboring regions would improve system reliability during extreme weather events.
- › **Alleviate congestion and unscheduled flows.** In 2020, high wind generation output and transmission limitations generated high congestion costs in eastern Kansas, southwestern Missouri, and southeastern Oklahoma. Increased transmission capacity within the region would help increase transmission capability for wind-producing areas and reduce prices in congested areas.
- › **Alleviate transfer capacity limits between the Plains region and its neighbors.** Highest congestion value of interregional transmission from 2012 through 2020 exists between the Plains region and Texas, ranging from \$15/MWh to \$69/MWh. High congestion values of transmission also exist between the Plains and Mountain (\$8/MWh–\$21/MWh) and Midwest (\$4/MWh–\$15/MWh) regions. A high congestion value indicates that increased transmission between the regions would reduce system congestion and constraints.
- › **Deliver cost-effective generation to meet demand.** High-priced areas persist in southern Oklahoma and southwest Missouri, and additional transmission to bring cost-effective generation to demand would help these areas reduce prices.
- › **Meet future generation and demand with additional within-region transmission.** It is anticipated that the Plains region will need between 7.3 and 9.9 TW-miles of within-region transmission in 2035 (median 8.3 TW-miles, a 119% increase relative to the 2020 system) to meet moderate load growth and high clean energy growth future scenarios.
- › **Meet future generation and demand with additional interregional transfer capacity.** The Plains region will need an anticipated 15.4 to 25.8 GW of additional transfer capacity with the Midwest region in 2035 (median of 21.1 GW, a 175% increase relative to the 2020 system) to meet moderate load growth and high clean energy growth future scenarios. Smaller transfers between the Plains region and the Delta (median value of 19.7 GW), Texas (median value of 9.8 GW), Southwest (median value of 3.7 GW), and Mountain (median value of 2.6 GW) regions may also be required.

### HELPFUL LINKS

- › Read the full study at: [www.energy.gov/gdo/national-transmission-needs-study](https://www.energy.gov/gdo/national-transmission-needs-study)
- › Contact GDO with additional questions: [transmission@hq.doe.gov](mailto:transmission@hq.doe.gov)

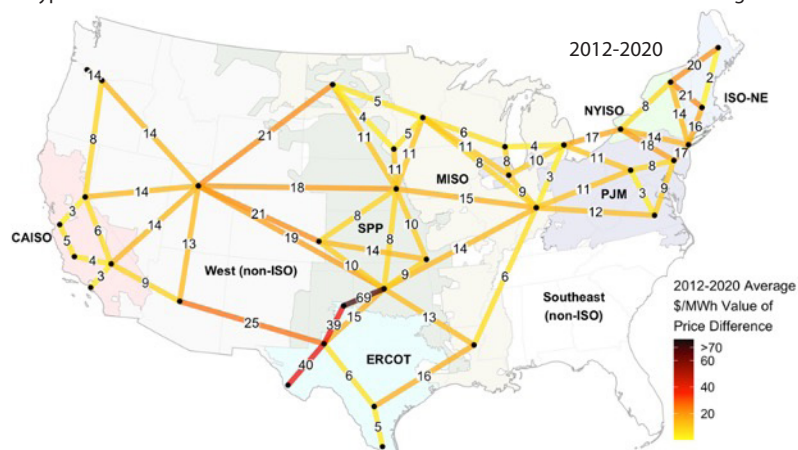
# FINDINGS AT A GLANCE

Circuit-miles of new or rebuilt transmission lines ( $\geq 100$  kV) energized between 2011 and 2020 by project driver.



Transmission projects energized over the last decade in the Plains region were predominantly installed to **address reliability concerns**.

Congestion value of hypothetical transmission links between select zonal nodes within and across regions.



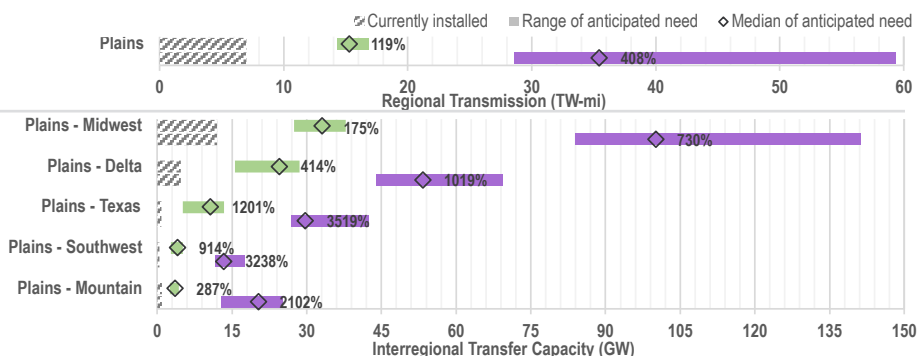
Wholesale market price differentials demonstrate that a **high value of new interregional transmission** exists **between the Plains region and Texas**.

The average marginal value of transmission between the Plains region and Texas from 2012 through 2020 is equal to \$42/MWh.

Note: Wholesale market price data is limited for non-Regional Transmission Organization (RTO)/Independent System Operator (ISO) regions. Absence of data does not necessarily indicate that there is no need for transmission to alleviate congestion and/or unscheduled flows in non-RTO/ISO regions. Findings are organized using geographic region nomenclature as described in the Needs Study. Source: D. Millstein, et al. (2022)

## Within-region transmission and interregional transfer capacity need for the Plains region in 2035

Range of new transmission need for future scenarios with **moderate load and high clean energy growth** (green, top for each region) and **high load and high clean energy growth** (purple, bottom). Median % growth compared to 2020 system shown.



Capacity expansion modeling results for the Moderate/High scenario group suggest an anticipated need of **8.3 TW-miles of new within-region transmission by 2035** (119% growth relative to 2020) and **21.1 GW of new interregional transfer capacity with the Midwest region by 2035** (175% growth relative to 2020).

Median 2035 capacity expansion modeling results for Moderate/High scenario group.